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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/006,444

11/20/2001

James A. Aman

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09/06/2006

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EXAMINER

SENF, BEHROOZ M

ART UNIT

PAPER NUMBER

2621

DATE MAILED: 09/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/006,444	AMAN ET AL.	
	Examiner	Art Unit	
	Behrooz Senfi	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 50 - 96 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 50 - 96 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 06/30/2006 has been entered.

Response to Amendment

2. Applicant's arguments (filed 06/30/2006) have been considered but are moot in view of the new ground(s) of rejection.

Applicant's amendment (filed 06/30/2006) canceled claims 34 – 49 and added new claims 50 – 96.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 50, 51, 60 – 63, 72 – 74, 83 – 87 and 96 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sengupta et al (US 6,359,647) in view of Jain et al (US 5,729,471).

Regarding claim 50, Sengupta teaches, an automated system for tracking the movement of one or more objects within a predefined area based upon computer

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analysis of captured video images and not requiring user intervention (figs. 1 - 2, camera handoff system 120, col. 1, lines 65 – col. 2, lines 3), Sengupta teaches a first stationary camera for generating a first video stream of images of predefined area (i.e. fig. 1, stationary “consider as non-adjustable” video camera 103), and a first algorithm operated on a computer system responsive to the first stream of video images (i.e. fig. 1, first stream of video images are the images that are being captured by the video camera 103 and being transferred to the system 120) for analyzing those images to first determine the relative X, Y coordinates and the dimensional characteristic of at least the size of each object within the predefined area (i.e. col. 4, lines 8 - 10, col. 5, lines 37 – 53) and for forming a tracking database representative of each object's coordinates, movement and dimensional characteristics (i.e. fig. 1, database 160), and a second set of movable cameras responsive to the tracking database (i.e. fig. 1, video cameras 101 and 102) and a second set of moveable cameras responsive to the tracking database (i.e. fig. 1, adjustable video camera 101, 102 and 120) wherein each movable camera is automatically directed without user intervention to maintain an independent view of one or more objects within the predefined area (i.e. fig. 1, movable cameras 101 and 102 and handoff system 120) and where the second set of moveable cameras continuously outputs a second stream of video images (i.e. second stream of video images are the ones that are being transferred from camera 101 and 102 to the system 120) and a second algorithm operated on a computer system responsive to the second stream of video images (i.e. fig. 1, second stream of video images are the ones that are being transferred from video camera 101 and 102 to the system 120) for

determining additional relative X, Y and Z coordinates and the dimensional characteristics of at least the size of each object and for updating the tracking database (i.e. col. 4, lines 8 – 10, col. 5, lines 37 – 53).

Sengupta teaches the use of stationary (non adjustable) video camera 103 for generating a video stream. But is silent in regards to using plurality (set) of stationary cameras for generating a video stream.

Jain in the same field teaches the use of a set of stationary camera for tracking the object and/or objects and generating a video stream by simultaneously image the scene (i.e. figs. 11a, 14 b, stationary video cameras 1 – 4).

In view of the above, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to implement such teaching by using plurality of stationary video cameras for tracking the object and/or objects and generating a video stream by simultaneously image the scene and track the object.

Regarding claim 51, combination of Sengupta and Jain patent teaches, the contiguous view formed by the first set of stationary camera is substantially parallel to the ground surface within the predefined area (Sengupta, fig. 1, coplanar field of view of the non adjustable camera is substantially parallel to the ground, also Jain, fig. 11a).

Regarding claim 61, the limitations claimed are substantially similar to claim 50, therefore the ground for rejecting claim 50 also applies here. Furthermore, the combination of Sengupta and Jain patent teaches, an automated system for controlling some combination of at least the pan, tilt and/or zoom controls of one or more second

movable cameras (Sengupta, fig. 1, adjustable camera 101 and 102, and handoff system 120, which includes the controller 130, col. 3, lines 8 – 15).

Regarding claim 62, the limitations claimed have been analyzed and rejected with respect to claim 50 above.

Regarding claims 60, 72, 83 and 96 combination of Sengupta and Jain patent teaches, wherein the second set of moveable cameras comprises at least two cameras and wherein the second set is additionally directed to automatically reassign any one or more cameras following any one or more objects to follow a different one or more objects based upon which camera view may currently be blocked by one object in front of another with respect to any camera view (i.e. cols. 4 – 5, lines 46 – 11).

Regarding claim 63, the limitations claimed are substantially similar to claim 51, therefore the ground for rejecting claim 51 also applies here.

Regarding claim 73, the limitations claimed are the method of the system of claim 50 for tracking the movement of one or more objects within a predefined area, which have been analyzed and rejected with respect to claim 50. Furthermore, combination of Sengupta and Jain teaches, combining the information detected by image analysis of both first and second video streams into a continuously updated tracking database indicating the relative X, Y and Z coordinates and dimensional characteristics of the objects (Jain, col. 8, lines 30 – 36, col. 9, lines 44 – 50 and col. 10, lines 1 – 5).

Regarding claim 74, the limitations claimed are substantially similar to claim 51, therefore the ground for rejecting claim 51 also applies here.

Regarding claim 84, the limitations claimed are the method of the system of claim 61, for controlling some combination of at least the pan, tilt and/or zoom controls of one or more second movable camera, which have been analyzed and rejected with respect to claim 61.

Regarding claim 85, combination of Sengupta and Jain teaches the step of storing the detected coordinates and dimensional characteristics regarding each object in tracking system (Sengupta, fig. 1, element 120, and Jain, fig. 1, video database, which are capable of storing the detected information).

Regarding claim 86, the limitations claimed are substantially similar to claim 63, therefore the ground for rejecting claim 63 also applies here.

Regarding claim 87, the limitations claimed have been analyzed and rejected with respect to claim 73 above.

5. Claims 52 – 59, 64 – 71, 75 – 82 and 88 - 95 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sengupta et al (US 6,359,647) in view of Jain et al (US 5,729,471) further in view of Leis (US 6,061,644).

Regarding claim 52, combination of Sengupta and Jain teaches, an automated system for tracking the movement of one or more objects within a predefined area based upon computer analysis, as discussed with respect to claim 50 above.

It is noted that, combination of Sengupta and Jain is silent in regards to markers adhered onto one or more locations on each object to be tracked within the predefined area that reflect, retro reflect or fluoresce energy.

Leis in the same field teaches, determining the position and orientation of one or more bodies (objects) by using markers (retro-reflective marker), which are affixed to one or more location on the object that reflect energy (i.e. fig. 1, col. 2, lines 61 – 67 and col. 3, lines 56 - 65).

Taking the combined teaching of Sengupta, Jain and Leis as a whole, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the tracking system of Sengupta by placing markers on each objects that reflects non-visible energy/light as taught by Leis '644 for more sufficient accuracy of tracking multiple objects. Doing so would improve the accuracy of object position and orientation determination. Furthermore, third algorithm operated on the computer system responsive to the energy reflecting off the markers for updating the tracking database with related X and Y and Z coordinates of each marker (Leis, fig. 1, element 28, col. 4, lines 17 – 52, col. 6, lines 4 – 20 of Leis).

Regarding claim 53, combination of Sengupta, Jain and Leis teaches, one or more energy sources emitting non-visible energy that is reflected or retro-reflected by the markers and is detected by both the first set and the second set of cameras (Leis, fig. 1, 24L and 24R “energy sources emitting infrared energy”)

Regarding claims 54 – 55 and 58 - 59, the limitations claimed, at least one uniquely encoded marker adhered onto a top surface of each object and a forth algorithm operated on the computer system, are substantially similar to claims 52 - 53 and have the same result, therefore the grounds for rejecting claims 52 - 53 also applies here.

Regarding claims 56 – 57 and 75 - 76, the limitations claimed have been analyzed and rejected with respect to claims 52 – 53 above.

Regarding claims 64, 68, 79, 88 and 92, the limitations claimed have been analyzed and rejected with respect to claim 56 above.

Regarding claims 65 and 69, the limitations claimed have been analyzed and rejected with respect to claim 57 above.

Regarding claims 66, 70, 77, 81, 90 and 94, the limitations claimed have been analyzed and rejected with respect to claim 54 above.

Regarding claims 67, 71, 78, 82, 91 and 95, the limitations claimed have been analyzed and rejected with respect to claim 59 above.

Regarding claims 80, 89 and 93, the limitations claimed have been analyzed and rejected with respect to claim 76 above.

Contact

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Behrooz Senfi** whose telephone number is **(571) 272-7339**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Mehrdad Dastouri** can be reached on **(571) 272-7418**.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

Or faxed to:

(571) 273-8300

Hand-delivered responses should be brought to Randolph Building, 401 Dulany Street, Alexandria, Va. 22314.

Any inquiry of a general nature or relative to the status of the application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is **(571) 272-6000**.

B. M. S.

8/31/2006

Mehrdad Dastouri
MEHRDAD DASTOURI
SUPERVISORY PATENT EXAMINER
TC 2600